

Introduction

Digital technology is rapidly evolving and in order to leverage commercially available photo and video equipment in the military environment, special attention must be given to packaging sensitive technologies for reliability, ease of use and ease of transport. The Edgewood Chemical Biological Center (ECBC) designed, built, and will test and deliver 66 Expeditionary Combat Video System (ECVS) kits and 82 Expeditionary Combat Photography System (ECPS) kits. The ECVS and the ECPS kits contain specific, professional grade, digital video camera equipment and digital still camera equipment, respectively. The kits are designed to support military reconnaissance missions.

Approach

The rapid development of these products can be effectively accomplished through the integration of design, manufacturing, packaging, environmental testing, and test reliability expertise across the center to redesign the kits to incorporate commercially available technology.



Figure 1: Combat Video Acquisition System V 3.0



Figure 2: Combat Still Acquisition System V 3.0

Equipment Included

The ECVS includes normal and wide angle lenses and other accessories to capture video in multiple formats. The ECPS includes normal, wide angle, and telephoto lenses to capture any image the user needs. Both kits include extra batteries to sustain prolonged deployments. The previous version of each kit is pictured in Figures 1 and 2 below.

ECPS			
Manufacturer	Model	Part #	Per case
Pelican	1650 Case		1
Canon	MR-14EX II	9389B002	1
Canon	EOS-1DX	5253B002	2
Canon	EOS-1DX, Charger		2
Canon	OC-E3	1950001	1
Canon	Extender EF 2X III	4410B002	1
Canon	600EX-RT	5296B002	2
Canon	EF 50mm USM Lens	2515A003	1
Canon	EF 24-70mm USM Lens	5175B002	1
Canon	EF 70-200mm USM Lens	2751B002	1
Canon	LP-E4N (Battery Pack)	5751B002	2
Joby	Gorillapod Tripod	JB00134-CEN	1
Tiffen Filter	58mm UV Haze Filter	58HZE	2
Tiffen Filter	77mm UV Glass Filter	77UVP	2
Tiffen Filter	82mm UV Haze Filter	82UVP	2
Gitzo	Monopod	GM3551	1
Sofradir	9350-EOS-PRO	914656	1
LaCie	00GB Rugged Tripple Interfac	301983	1
Lexar	Multi-Card Reader	LRW02URBNA	2
Lexar	128 GB UDMA	LCF128CRBNA1066	4
Giottos	Giottos Optical Cleaner	CL1001	1
Dell	Dell Precision M4800, Laptop	M4800	1

ECVS			
Manufacturer	Model	Part #	Per case
Pelican	1650 Case		1
Canon	EF 85mm USM Lens	1056B002	1
Canon	EF 100mm USM Lens	3554B002	1
Canon	EF 8-15mm Fisheye Lens	4427B002	1
Canon	Battery Pack Bp-955	4587B002	2
Canon	EF 50mm USM Lens	2515A003	1
Canon	EF 28-300mm USM Lens	9322A002	1
Edelkrone	Slider plus	80590	1
Flashpoint	144 LED Camera Light	CL-144B	1
GoPro	GoPro Hero4 Black	CHDXH-401	2
Manfrotto	190CXPro 3 Tripod	MAMT190X3K20	1
Manfrotto	Tripod head	MVH500AH	1
SanDisk	64 GB Micro SD	SDSDQX-064G-A46A	4
Sennheiser	Wireless mic system	EW100ENGG3-A	2
Sennheiser	Wireless mic system	EW100ENGG3-A	2
Sennheiser	Shotgun Microphone	MKE600	1
Tiffen	72mm UV Filter	72UVP	4
Tiffen	67mm UV Filter	67UVP	2
Tiffen	77mm UV Filter	77HZE	2
Sennheiser	HD 280 Pro Headphones	4974	1
GlideCam	GlideCam HS 2000	GLHD2	1
GlideCam	GlideCam HS 2000	GLHD3	1
GlideCam	GlideCam HS 2000	GLHD4	1
Lexar	256 GB SDXC memory card	LSD256CRBNA600	4
Canon	C100 Mark II Cinematic EOS	0202C002	2
Canon	C100 Mark II Cinematic EOS	0202C003	2
Canon	C100 Mark II Cinematic EOS	0202C004	2
Lexar	Multi-Card Reader	LRW02URBNA	2
LaCie	00GB Rugged Tripple Interfac	301983	1
Sofradir	9350-EOS-PRO	914656	1
Giottos	Giottos Optical Cleaner	CL1001	1
Dell	Dell Precision M4800, Laptop	M4800	1

SolidWorks Models

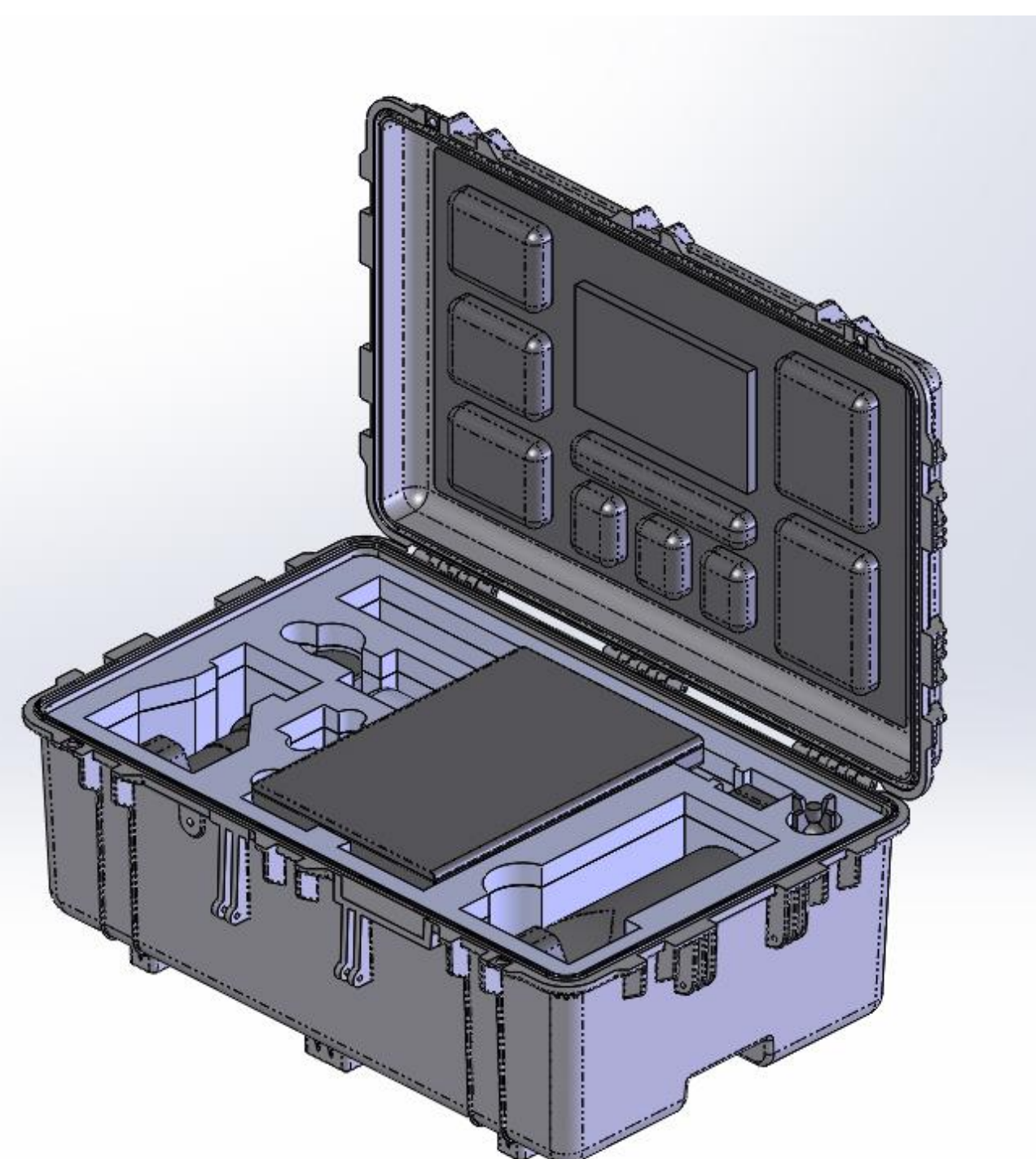


Figure 3: Design of ECPS

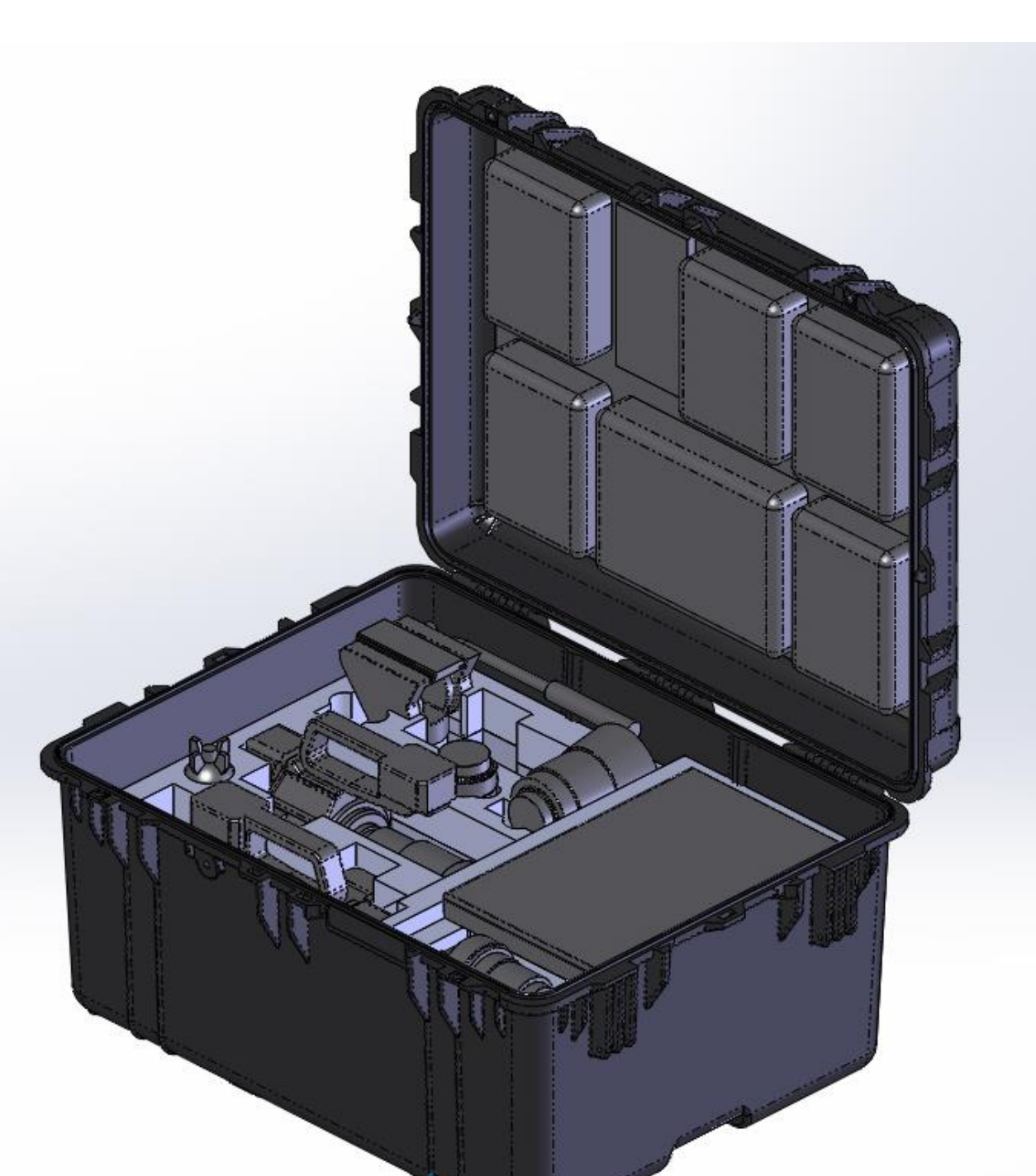


Figure 4: Design of ECVS

Prototype



Figure 5: Prototype of ECPS



Figure 6: Prototype of ECVS